The DENTAL DIGEST

OCTOBER, 1935
Vol. 41 No. 10

in ORANGES..

Economy

or in BURS..

DEPENDS NOT ON HOW MANY YOU GET FOR YOUR MONEY.. BUT ON HOW MANY OF THEM YOU CAN EFFECTUALLY USE

FINER-GRAINED STEEL
Electro-wrought and -annealed; greater density of structure contributes to edge strength and surface smoothness of blades.

IMPROVED DESIGN
Numerous refinements in blade angles, contours and depths enhance both cutting efficiency and durability

PRECISION MANUFACTURE
An extra fine finishing cut imparts a razor-keen edge and a mirror-like, debris-shedding surface to every cutting blade.

SCIENTIFIC TEMPERING
By handling a limited number of identical burs at a time, unerring skill and accurate thermal control produce exactly the right temper for each type and size.

UNCOMPROMISING INSPECTION
Blade perfection and true-running qualities are doubly safeguarded by a continuous series of inspections and tests which immediately detect imperfections and weed out any burs which show the slightest flaw.

MODERNIZED PACKAGING
The New Cutwell half-dozen package, with its window-opening, its moisture-proof transparent cellulose wrapper and its numbered Bakelite bur holder, combines visibility and protection with utmost convenience in handling.

All New Cutwell Burs—regular and special—are available in Densco Taper Shank as well as in the conventional Straight and Right Angle styles. A comprehensive range of types and sizes is also provided in the Short Shank Right Angle series. Your salesman will gladly supply full information.

And now...

NEW CUTWELL ECONOMY

Is Greater than Ever at the New *Lower Prices!*

● The refinements which featured the introduction of New Cutwell Burs more than three years ago set new high standards of perfection in steel, design and manufacture, and safeguarded those standards with a rigid inspection system through which no defective bur could pass. Beyond that, a new measure of visibility and protection was provided in the New Cutwell moisture-proof window packages . . . And now you can enjoy the benefits of these advancements—the superlative accuracy and speed of New Cutwell performance, the waste-reducing advantages of New Cutwell packaging—at new low prices! Prove to yourself the economy and satisfaction of using New Cutwells by ordering a supply today.

A PRODUCT OF

THE RANSOM & RANDOLPH COMPANY • TOLEDO, OHIO

The DENTAL DIGEST

VOLUME 41 — *October, 1935* — NUMBER 10

EDWARD J. RYAN, B. S., D. D. S., Editor

ETHEL H. DAVIS, A. B., Assistant Editor

An Oral Hygiene Publication. Published monthly on the fifteenth by Dental Digest, Inc.

Entered as second class matter at the Postoffice at Ashland, Ohio, under the Act of Congress, March 3, 1879.

PUBLICATION OFFICES: 1005 Liberty Ave., Pittsburgh, Pa.

Merwin B. Massol, Publisher; Associates: J. J. Downes, W. Earle Craig, D.D.S.; R. C. Ketterer, Publication Manager.

Subscriptions should be sent to the Publication offices, 1005 Liberty Ave., Pittsburgh, Pa.

Manuscripts and correspondence regarding editorial matters should be addressed to the editor at 708 Church Street, Evanston, Ill.

Subscription rates, including postage:

$2 per year in the United States, Alaska, Cuba, Guam, Hawaiian Islands, Mexico, Philippines, Porto Rico. To Great Britain and Continent, $2.75; Canada, $3.50; Australia, $2.75. All other countries $2.75. Single copies, 25c.

DISTRICT OFFICES:

Chicago: Peoples Gas Bldg.; W. B. Conant, Western Manager.

New York: 18 East 48th St.; Stuart M. Stanley, Eastern Manager.

St. Louis: Syndicate Trust Bldg.; A. D. McKinney, Southern Manager.

San Francisco: 155 Montgomery St., Don Harway, Pacific Coast Manager.

BAKING PORCELAIN INLAYS DIRECTLY IN THE INVESTMENT

DWIGHT T. BARCROFT, D.D.S.
Chicago

MOST dentists prefer the gold foil, the gold inlay, or the silicate restoration rather than a loose-fitting porcelain inlay because of the detailed technique involved in the perfect adaptation of the platinum matrix for porcelain inlays and the general lack of satisfactory results.

No doubt the cost involved to equip one's laboratory for high-fusing or medium-fusing porcelain was also an item to discourage its use. These factors have been largely overcome by the introduction of low-fusing porcelain, which is equal in strength to the higher-fusing porcelain, by the introduction of an investment material adhering to it, and by the marketing of low temperature (2000°) furnaces with pyrometer attached at reasonable prices.

The Investment Material

The new Ransom and Randolph porcelain investment enables one to run the impression of the cavity in this material and bake the porcelain directly in the investment without the use of a platinum matrix. This investment is a fine white powder which is mixed with water on a cement slab. The material does not fuse at a temperature under 2100°. It is, therefore, easily and quickly brushed from the porcelain after the inlay is finished. An etched surface is left which is ideal for cementing.

Taking the Impression

It is recommended that the impression be taken in modeling compound, especially for gingival third cavities in the anterior teeth involving the interproximal surfaces where a sectional impression is always necessary.

1. For the gingival impression, a strip of compound about a fourth of an inch wide is cut from a regular slab of compound. This strip is cut into small pieces less than one-half inch in length. It is well to make up fifteen or twenty of these at a time (Fig. 1).

2. An inverted cone bur is heated and sunk on the flat side into the end of one of these blocks of compound (Fig. 2). This is used as a handle to carry the compound into the cavity and also later to vibrate the investment onto the pattern.

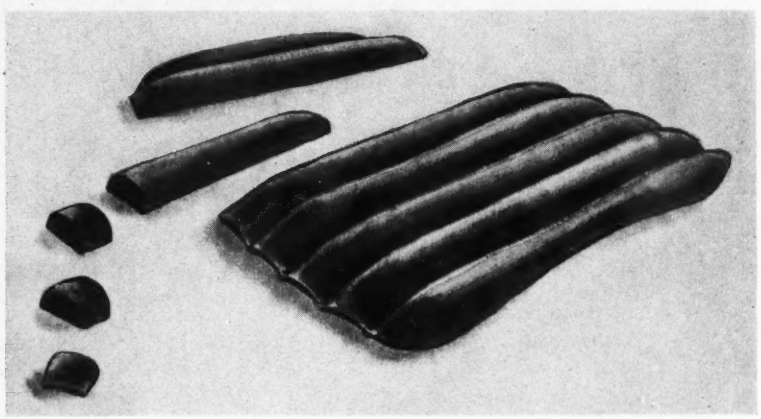


Fig. 1

3. The end of the compound is warmed and molded to a point with the fingers (Fig. 3).

4. The compound is chilled with cold water until it becomes hard.

5. The tip is passed quickly over the flame, forced into the cavity, and chilled immediately with cold water (Fig. 4). If the tip has not been heated too much, the compound, just back of the heated portion, will act as a plunger and a sharp clean impression will be had (Fig. 5). The compound forces the gum tissue back much better than inlay wax; however, there will be times when a gutta-percha filling will be necessary to pack back the gum tissue before the impression is taken.

It is advisable to take two or three impressions of each cavity. Porcelain is a frail material before it is cemented into place and it takes only a little more time to bake two or three inlays than it does for one.

6. In the anterior teeth, it is necessary to take a lingual and labial sectional impression. Use a wide piece of matrix material which will extend at least a sixteenth of an inch beyond the incisal edge and long enough to cover the labial and lingual surface of the tooth (Fig. 6). This matrix is placed between the teeth and held firmly on the labial with the left hand. The heated compound is forced to place (Fig. 7). The operator should make sure that the compound comes beyond the incisal edge of the tooth at least a sixteenth of an inch.

7. Chill thoroughly with cold water and remove the steel matrix material.

8. With a razor blade or a sharp instrument the compound is trimmed on the labial precisely to the margin of the cavity and at the incisal edge, so that the compound can be removed lingually (Fig. 7).

9. A longitudinal groove is cut in the portion that extends beyond the incisal edge to act as a guide when the two parts are later put together (Fig. 7).

10. Chill the lingual portion of the impression and lubricate with a little cocoa butter or vaseline.

11. Take an impression of the labial surface, being sure to include the groove at the incisal, and chill immediately (Fig. 8).

12. Remove the labial portion and then the lingual.

13. The two parts of the impression will fit together nicely and are luted together with inlay wax (Fig. 9).

14. This is mounted on an inverted cone bur for convenience in handling (Fig. 9).

Making the Model

Ransom and Randolph porcelain investment sets in about three or four minutes and a final set of about fifteen minutes when mixed thick. In order to handle the model after it is run up, a base must be made for

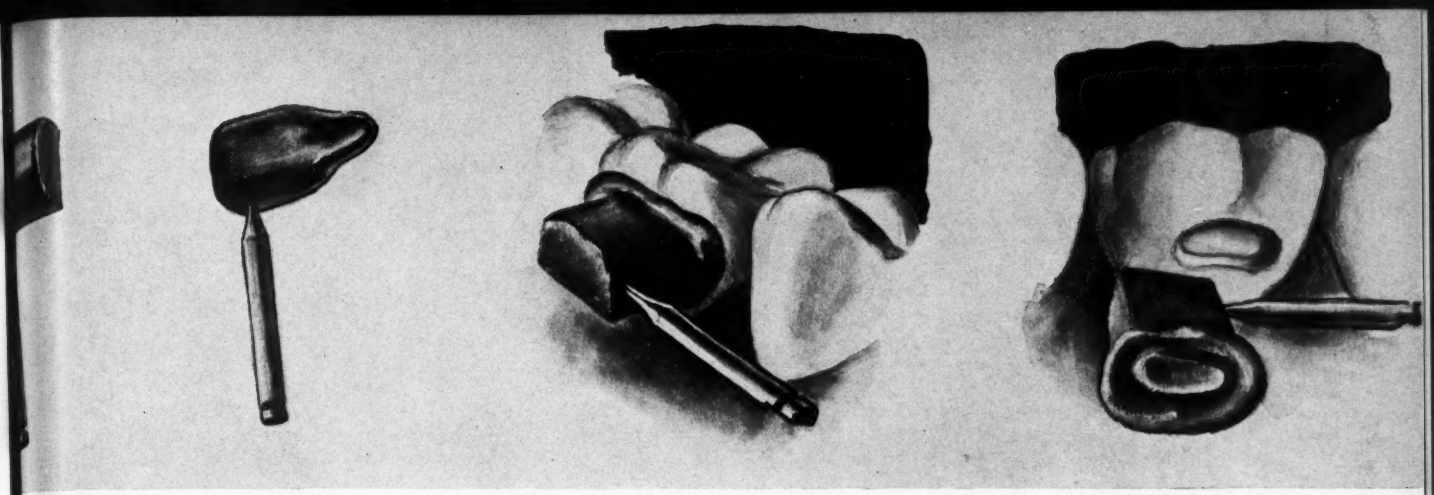


Fig. 3 Fig 4 Fig. 5

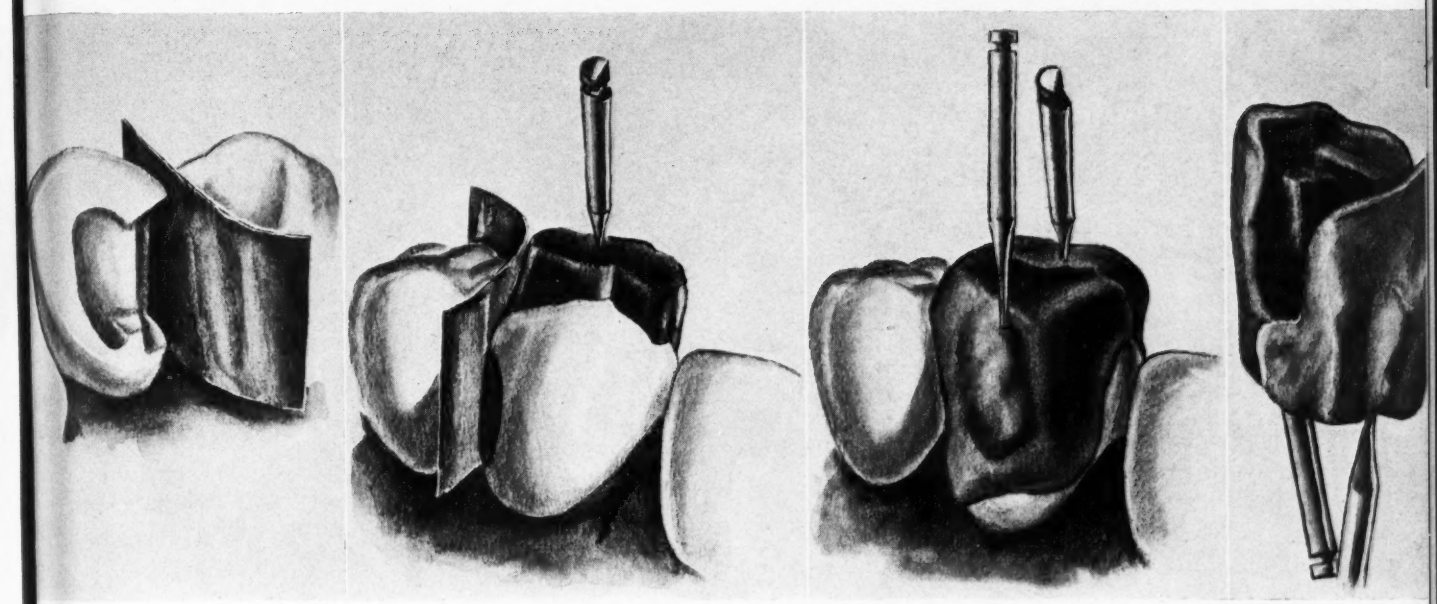


Fig. 6 Fig. 7 Fig. 8 Fig. 9

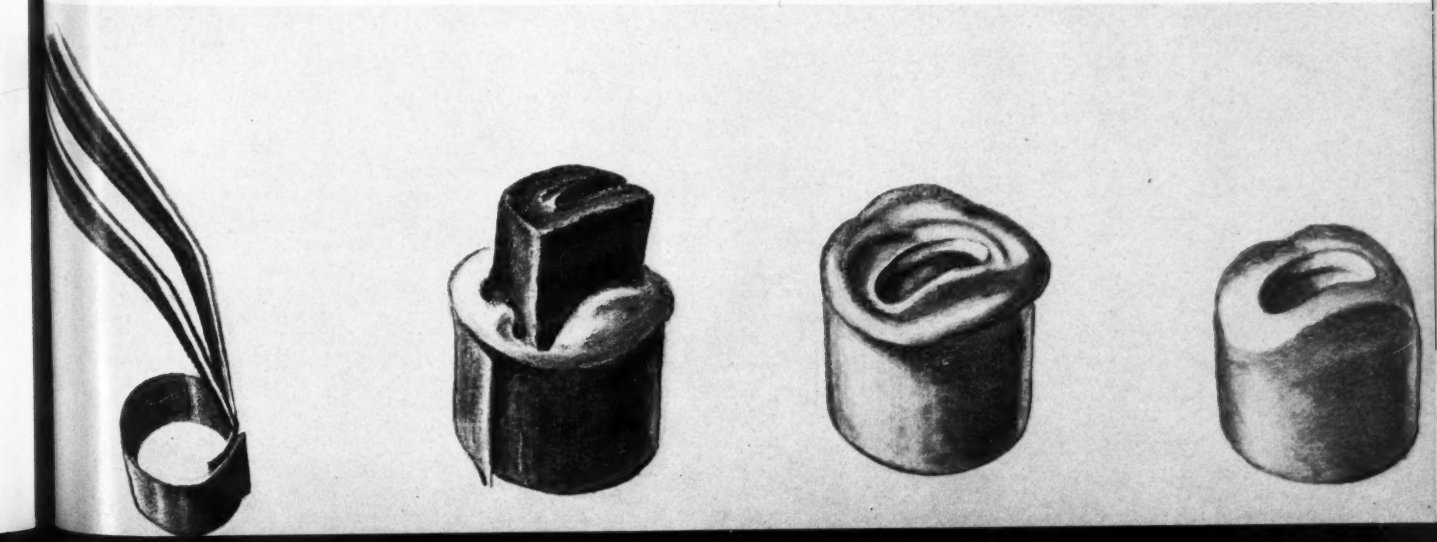
it of the same material. It is necessary for this base to be a part of the model itself; therefore, a ring of Scotch Masking Tape is made to act as a mold for the base (Fig. 10). This is important.

Scotch Masking Tape can be bought at any good paint store and can be used for boxing in, of full and partial impressions. The one-inch width is preferable.

Cut a strip one-fourth inch wide and 1½ inches long and make a ring with the sticky side of the paper inside. This can best be done by using a pair of straight tweezers to fold it back on itself (Fig. 10).

1. A small amount of investment and three or four drops of water from the water syringe are placed on a glass slab.

Fig. 10 Fig. 11 Fig. 12 Fig. 13



2. Draw the investment into the water and where the investment and water meet, dip the camel's hair brush and paint the pattern, carefully blowing off the excess so as to be sure to have no bubbles.

3. Lay the pattern aside and mix the investment to a thick consistency.

4. Place a little on the pattern with the spatula and vibrate to place.

5. When the pattern is covered, a little of the investment is picked up with the fingers, packed into the little ring of Scotch Masking Tape, and the pattern covered with investment is set on the ring; thus the model and base are made of the same mix of investment (Fig. 11).

6. When the material has set, which will take about fifteen minutes or less, according to the thickness of the mix, the model and base are dipped in hot water, and the compound removed (Fig. 12).

7. If the impression is taken in inlay wax, boiling water is poured over the wax and washed out. The hot water will not injure the model in any way. The masking tape is stripped off and trimmed with a razor blade to the level of the cavity margins so as to make the application of the porcelain simple and all excess can be easily removed (Fig. 13).

THE APPLICATION OF PORCELAIN

1. Almost all inlays are finished in two bakes with the use of Apco porcelain properly condensed.

2. The base which is a part of the model is used here as a means of holding this model in a matrix holder, so that the porcelain may be vibrated directly into the cavity model (Fig. 14).

3. The porcelain is placed on a clean glass slab and enough water added to give a thick creamy consistency.

4. Spatulate thoroughly with an agate or bone spatula and draw out the bulk of the moisture with a gauze napkin.

5. Dip the model, held by the matrix holder in water, and throw off the excess moisture (Fig. 14).

6. Take a small amount of porcelain on the porcelain spatula and apply to the base of the cavity, being sure to work it into the angles; vibrate with the serrated end of the spatula against the matrix holder (Fig. 14).

7. Continue the addition of porcelain and the vibration, using a gauze napkin to withdraw the excess moisture from the bottom of the model.

8. The moisture is taken away from the porcelain by withdrawing the moisture from the model.

9. If the porcelain gets too dry, add a little water from the dropper to the bottom of the model and it will be absorbed up to the porcelain.

10. Build up the porcelain, so that it bulges a little out of the cavity, and trim to the cavity margins by passing the spatula lightly over them to remove the excess.

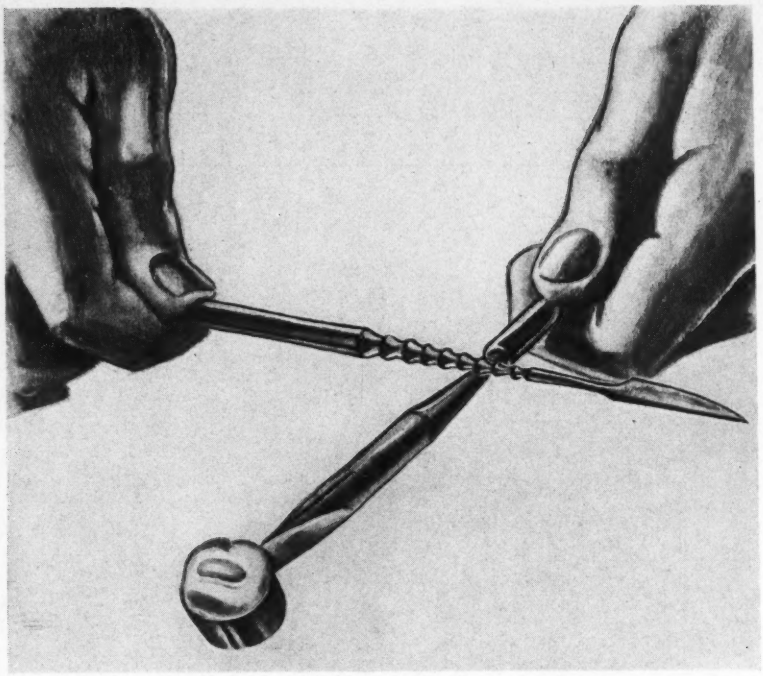


Fig. 14

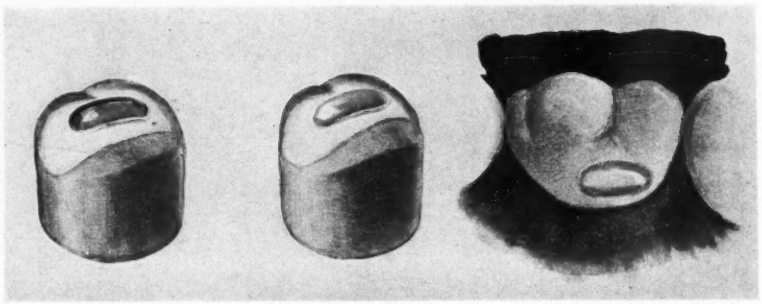


Fig. 15 Fig. 16 Fig. 17

BAKING THE PORCELAIN

1. If the furnace is cold, the model may be placed in the furnace; the temperature is brought to 1750°, and the model held there for three minutes.

2. Allow the furnace to cool to about 500° before removing it from the furnace. Place the model again in the matrix holder and dip in water.

3. It will be noticed that the porcelain has shrunk into the cavity and more porcelain must be added (Fig. 17).

4. Be sure to condense the porcelain by careful vibration and withdrawal of moisture and have the cavity just slightly over-full but not so full as in the first bake.

5. Dry the model slowly before placing it in the hot furnace and bake to 1850° for three minutes (Fig. 16).

6. Allow the furnace to cool to about 500° before removing.

7. Place the model in water and remove the investment by forcing the inlay out with the thumb nail or instrument and brushing the investment off the inlay with a stiff toothbrush and water.

8. The temperature and time have to be varied somewhat, according to the time it takes the furnace to reach a given temperature.

9. If the furnace heats faster than

100° a minute the operator will have to allow a little more time after this heat is reached. Instead of giving it three minutes he may need four or five or six minutes to get the desired result.

Cementing the Inlay

It will be noted when the investment is removed that the inlay has an etched surface which is ideal for cementing.

1. These inlays fit accurately with a slight drag so that they will have to be removed with sticky wax or teased out with a fine explorer after they have been tried in for a fit.
2. The use of oxyphosphate of zinc cement is therefore suggested.
3. After the inlay is forced to place, an instrument is held against the inlay and vibrated with another serrated instrument (Fig. 17).
4. If, after cementation, there is any overhang, it must be dressed down and polished with tin oxide.
5. If proper care is taken in baking, however, there will be almost no finishing necessary.

4816 North Western Avenue.

Color

The matching of colors is all worked out as accurately as possible in the Apco color guide. The variations will, of course, depend on the skill of the operator. There is, however, an almost unlimited number of combinations that can be worked out inasmuch as the gingival and incisal coloring of the old Trubyte, the new Trubyte, the Justi, and The S. S. White shade guides are given in the chart.

THE MANAGEMENT OF THE MANDIBULAR THIRD MOLAR

M. HILLEL FELDMAN, D.D.S.
New York

THE removal of a mandibular third molar is frequently a complex problem. The difficulties to be considered are both of a mechanical and a pathologic nature: (1) There is the frequently occurring buccal shelf on the mandible which prevents the cemental grip of the beaks of the forceps. (2) There are distal apical curvatures which make removal difficult. (3) There are the teeth that are crowded against the ascending ramus, with the distal enamel of the crown not erupted, although the tooth seems to stand upright, with the occlusal aspect on a plane with the second and first molars (Fig. 2). (4) Moreover, there are the inflammatory conditions which partly interfere with free movement of the jaw. By this inability of the mouth to open to its fullest extent a narrow surgical radius is created. This prevents the forceps from free play by bringing the maxillary molar down too close to the lower molar.

It must be borne in mind here that unless a mouth can open to its full normal extent, the operator is more apt to fracture a tooth. The forceps have a tendency to bring the tooth out buccally too abruptly instead of somewhat out of the alveolus in the direction in which the tooth points.

During pathologic dentition, there may be the following symptoms: swelling, suppuration, trismus, cervical adenitis, peritonsillar edema. Almost invariably one will find that the whole condition arises from an original focus under the flap which partly covers the disto-occlusal and disto-buccal portion of the third molar. This is an extremely dangerous condition to tamper with unthinkingly. The inflamed pocket which is found under the overlying flap should command the operator's attention. It is unwise to excise this flap on the disto-occlusal aspect in the hope of gaining an ultimate healthy eruption of the third molar.

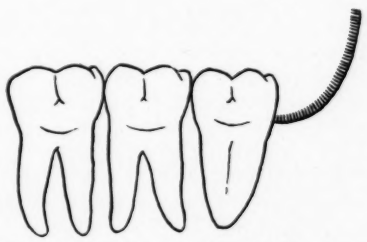


Fig. 1—Normal relationship of the three mandibular molars to one another and the space distal to third molar.

Even if the excision of this inflamed tissue could free the tooth for its ultimate eruption, there is still the danger of spreading the infection to the cervical glands. If one will examine a number of such third molars, it will be seen that wherever there is an inflamed occlusal mucosa, there is also a crowding of the tooth against the distal aspect of the second molar as in the diagram shown here. In the normal alinement of the three mandibular molars, it will be seen that the arrangement is as shown in Fig. 1.

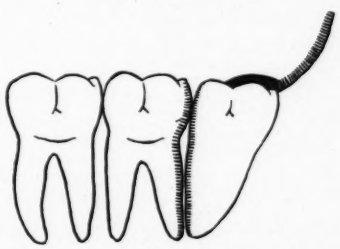


Fig. 2—Crowding of third molar between second molar and ramus. Note distal enamel surface of third molar covered by bone. This tooth should not be retained.

There should be the same spacing between the mesial root aspect of the third molar and the distal root aspect of the second molar as there is correspondingly between the second and first molars.

Unless such a condition as shown in Fig. 1 is seen in the roentgenogram, it is sound practice to advise the removal of the third molar.

These third molars also present a distal enamel surface that is crowded against the ramus and interferes with the coronal portion of the tooth so that it can never be completely free of investment.

It is a good policy to consider a third molar pathologic, therefore, when the operator finds that the enamel surface on all sides cannot fully erupt, free from any covering of soft or hard tissue investment.

The so-called pericoronitis which is frequently seen around the pathologically erupting third molar is really a "coronitis" only in so far as the distal aspect is concerned. Utmost caution and care must be exercised here so that no undue trauma is initiated when the tooth is removed.

(*Continued on page* 329)

730 Fifth Avenue

ROENTGENOGRAPHIC AND DIFFERENTIAL DIAGNOSIS IN ORAL SURGERY

MAX H. JACOBS, M.D., D.M.D.
Boston

DIAGNOSIS may be defined as the recognition of a disease from its symptoms. Differential diagnosis may be defined as the distinguishing between diseases with similar symptoms. The methods that may be used in the making of a diagnosis are many and varied. It is sometimes necessary that one or more methods be employed in arriving at a diagnosis. At times the signs and symptoms may lead to a diagnosis which may be difficult to distinguish from another similar condition.

In oral surgery, the number of conditions necessitating an intimate knowledge of the symptomatology from which a differential diagnosis may be made are many. Each of the three types of tissues, teeth, bones, and soft tissues, presents a variety of pathologic conditions in which symptoms may be similar. The successful outcome of treatment depends on accurate diagnosis.

Subperiosteal Abscess, Alveolar Abscess, and Osteomyelitis

Many oral surgical conditions arising from the teeth are difficult to diagnose accurately. The more common diseases of the teeth, such as the ordinary chronic abscesses, pulpitis or caries, will not be discussed here. Only those diseases that offer difficulties in diagnosis in the early stages of their respective conditions will be considered.

Beginning subperiosteal abscess, alveolar abscess, and osteomyelitis are three conditions that offer difficulties in early diagnosis. The points of differentiation are slight, but on these points depend the recognition of the entity and the outcome of treatment.

When a chronic apical abscess becomes fulminating, the alveolar process is destroyed, and one of two things may happen before a conclusion has been reached. If the pus remains between the bone proper and the periosteum, the condition will be a subperiosteal abscess. If the pus burrows through the periosteum and enters the soft tissues, a dento-alveolar abscess will result. If the pus remains within the cancellated bone structure in a localized area, a circumscribed osteomyelitis, or necrosis will develop. Should the pus become diffused throughout the bone and lift the periosteum off, a diffuse osteomyelitis or necrosis is the diagnosis.

The subperiosteal abscess presents a more or less indurated mass over the affected area. The pressure under the periosteum results in a characteristic type of pain. Because the periosteum contains an elaborate supply of nerve endings, the lifting off of this membrane results in a continuous, boring, localized pain rarely referred to other parts. The involved tooth is tender to percussion, but is not elongated. The hardness of the mass may sometimes simulate a new growth, but the sudden onset and increase in temperature rules this out.

When pus burrows through the periosteum to fill the cellular tissues the condition presents a dento-alveolar abscess. The amount of areolar connective tissue spaces permits a wide latitude of extension without undue pressure on the nerve endings; hence, a fully developed alveolar abscess is without pain. Swelling is marked; the lips, lower eyelid, or whole cheek may be involved, but despite this, there is no pain. The skin is reddened and the temperature varies between 100° and 104° F. The involved tooth is tender and elongated, and the overlying tissues are edematous and fluctuant.

In beginning osteomyelitis, the diffusion of the exudate through the bone tends to lift the teeth out of their sockets. All the teeth on the involved side are tender and elongated to some extent. The pain is characteristic; it is lancinating, boring, and continuous throughout the whole jaw; it is referred to the ear, temple, and the upper part of the head. The cervical glands are enlarged and tend to become matted, presenting a marked hard swelling, necessitating differentiation from the dento-alveolar abscess. The temperature and pulse are high, the patient is prostrated, and unless early general treatment is instituted, dehydration takes place.

Roentgenographic Characteristics

Correct roentgenographic interpretation early in these three conditions is important, for on this may depend abortion or fulmination. The subperiosteal abscess presents nothing more than a widening of the periodontal space of the involved tooth. The dento-alveolar abscess presents a marked widening of the periodontal space with radiolucency around the apex of the involved tooth. This radiolucency extends obliquely or longitudinally through the bone structure. If a probe were to be put through the socket of such a tooth, it would be found to traverse the area representing the oblique or longitudinal radiolucency.

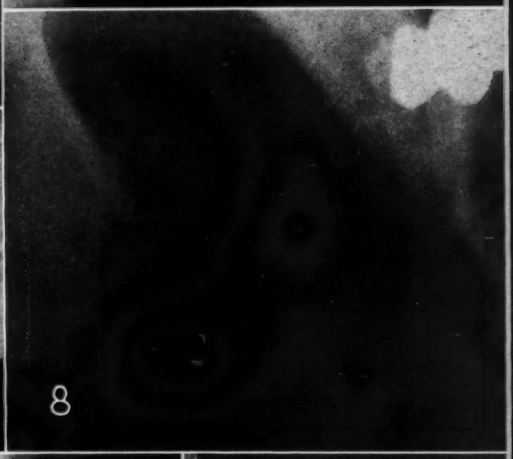
It has been generally thought that the roentgenographic interpretation of osteomyelitis cannot be made until late in the disease. Examination of a series of cases of acute osteomyelitis, however, presented roentgenographically one cardinal sign of marked importance.

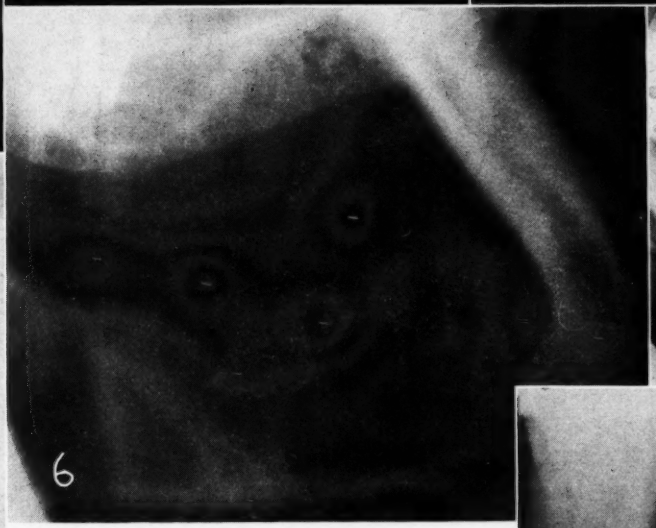
There is a law in physics which says that two things cannot occupy the same space at the same time. In osteomyelitis, the bone becomes filled with an inflammatory exudate. As the cancellated structure of the bone becomes filled beyond its limits, something has to give way. The points of least resistance are the teeth and they are pushed out of their sockets. This is evidenced in the roentgenograms by the widened periodontal spaces of all the teeth of the involved side (Fig. 1). Clinically, this is manifested by elongation and tenderness of these teeth. The other clinical signs are classical, with swelling of the jaw, involvement of the cervical glands, and increased temperature and pulse.

The second noteworthy roentgenographic sign, which occurs somewhat later in the disease, is mottling of the bone, denoting disintegration and beginning sequestra formation (Fig. 2).

Differential Diagnosis in Infections of the Floor of the Mouth

Infections having their origin lin-





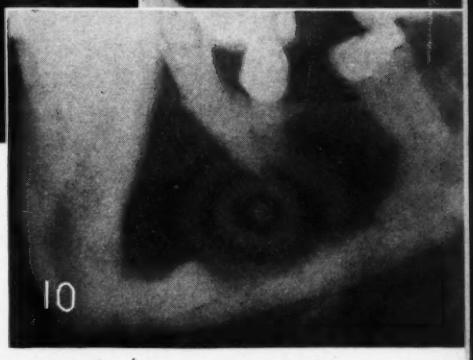


Fig. 1—Beginning osteomyelitis. Note widened periodontal spaces of all the teeth on the involved side.

Fig. 2—Same case later. Mottling and sequestration of the mandible.

Fig. 3—Dentigerous cyst of ramus. Note missing third molar. The follicle probably was not removed following extraction.

Fig. 4—Dentigerous cyst of ramus. Note missing molars. The follicle of the third molar was probably not removed following extraction.

Fig. 5—Dentigerous cyst of upper jaw with unerupted cuspid within the sac.

Fig. 6—Radicular cyst in edentulous jaw. Type of cyst associated with roots of teeth. Patient had worn a denture for seven years before cyst was discovered.

Fig. 7—Beginning radicular cyst of lower jaw.

Fig. 8—Multilocular cyst of mandible.

Fig. 9—Occlusal view of an adamantinoma of the mandible with impacted cuspid in the symphysis.

Fig. 10—Adamantinoma of left mandible. Same case as Fig. 9.

gual to the mandibular teeth result in swellings of the floor of the mouth. Diagnosis depends on the predominating organism and the course the infection takes. Cellulitis is present when the predominating organism is the streptococcus. The mylohyoid muscles, which form the bed of the floor of the mouth, and the submaxillary glands determine the type of cellulitis.

Streptococcus infections arising posterior to the submaxillary gland involve the base of the tongue, the soft palate, and the peritonsillar space. The posterior deep and superficial cervical glands are involved, resulting in a massive swelling below the angle of the jaw. Deglutition is difficult, trismus is marked, and the temperature is high. This is the condition that frequently follows the extraction of a third molar, in the tissues around which has been an acute or subacute pericoronitis with streptococci predominating.

The submaxillary gland lies both above and beneath the mylohyoid muscle. Streptococcus infection of this gland, directly or by extension, raises the tissues of the mouth, pushing the tongue against the palate. The middle and posterior cervical glands are involved. The diagnosis in this condition is *unilateral submaxillary cellulitis*.

This type of infection easily extends through the median raphe to the submaxillary gland in the opposite side. When both glands and the tissues of the floor of the mouth are involved, "bilateral submaxillary cellulitis" is present.

Extension of this infection through the mylohyoid muscles into the underlying tissues of the neck progresses posteriorly to the glottis. The tissues are filled with a serosanguinous fluid, which extends to the upper part of the larynx and results in edema of the glottis. Breathing is difficult and cyanosis takes place. The neck from ear to ear is greatly swollen, the tongue is pushed hard up against the palate, and the tissues of the mouth extend above the occlusal surfaces of the teeth. This is a true picture of Ludwig's angina.

When in the course of any one of these cellulitic conditions, the staphylococcus becomes the predominating organisms, an abscess is formed. In the third molar areas, a pericoronitis becomes a pericoronal abscess with posterior cervical adenitis. A submaxillary cellulitis becomes a submaxillary abscess.

In Ludwig's angina, the infection is so fulminating and the organism so virulent that there is not a great deal of time for staphylococci contamination with abscess formation. Staphylococci infections tend to become walled off; streptococci infections do not become walled off. This probably accounts for the high mortality in Ludwig's angina.

When a cellulitis or an abscess becomes contaminated with Vincent's organisms, the course of the disease becomes more difficult to manage. The odor of the exudate in pure streptococci or pure staphylococci infections is not bad. When there is a mixed staphylococcus and streptococcus infection, the odor is somewhat foul. Whenever Vincent's organisms are included in the exudate, the odor is extremely foul.

Infections of Muscles

There are times when infections centralize themselves beneath the tendinous attachments of muscles. The course of such a condition is a long and difficult one. The more common muscles involved are the internal pterygoid, masseter, temporal, and the muscles attached to the mental tubercles. The most common cause for such a condition is incorrect technique during the injection of a local anesthetic. An incompletely sterilized needle, nonsterile mucous membrane or nonsterile solution may be the means of introducing such an infection.

Involvement of the internal pterygoid tendon is the result of a mandibular injection made too low and extending too far distally, with bacteria being pushed through the mucous membrane into the muscle or its tendon. As such an infection gains headway, the tenseness of the tendon over the exudate causes a bulge in the lateral wall of the neck anterior to the tonsil. Here, acute pericoronitis and peritonsillar abscess must be ruled out. The line of least resistance is along the posterior border of the ramus, with the exudate extending along its inner surface. As long as the infection is confined to the tendon, the pressure causes excruciating pain referred to the ear and head. Fluctuation and pointing cannot take place readily. It is only when the infection reaches the muscle tissue or fascia along the ramus that relief can be had. The posterior cervical glands are swollen and many times the accessory lobe of the parotid gland becomes involved. Trismus is marked, owing to muscular spasm, and the temperature varies from 99° to 100° F.

The tendon of the temporal muscle may become involved when its attachment reaches the retromolar triangle. Unless the injection of a local anesthetic is made under sterile conditions, an infection may be introduced, and for a time it is hard to differentiate this from an alveolo-osteitis following lower third molar extraction, a subperiosteal abscess in the molar area, or an acute pericoronitis.

Too high an injection may introduce an infection in the masseter muscle which has an attachment on the inner surface of the ramus.

Those who resort to infiltration anesthesia for the extraction of lower anterior teeth, may make a low lingual injection, sending bacteria into the tendons of the geniohyoids. The pain, as a result of infection in this condition, is limited to the chin, with involvement of the anterior cervical glands. There is a mass under the chin and the infection is usually confined below the mylohyoids.

Roentgenographic Diagnosis in Cyst Formations

Generally speaking, roentgenographically, any large radiolucent area with a well defined lamina dura may be diagnosed as a cyst. There are radicular, dentigerous or follicular, multilocular, median, and bone cysts. Accurate diagnosis depends on many factors.

The cyst that is associated with the root or roots of a pulpless tooth is a radicular cyst (Figs. 6 and 7). This type of cyst membrane is thin and if infection of some kind has been present, the membrane is degenerated.

Fig. 11—Adamantinoma of right mandible. Same case as Figs. 9 and 10.

Fig. 12—Giant cell tumor of mandible.

Fig. 13—Median cyst. Sometimes mistaken for an enlarged incisal foramen.

Fig. 14—Osteitis fibrosa. Note homogeneousness of bone structure. The normal bone trabeculae are converted into a fibrous tissue.

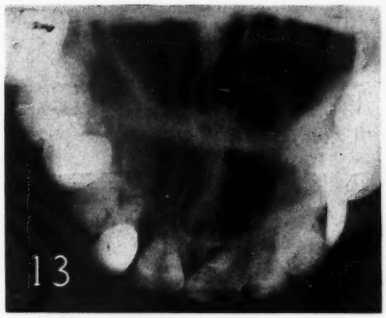
Fig. 15—Osteitis fibrosa. Note change of normal bone markings. In this case there was a growth of the fibrosis on the external surface of the jaw as well as within. Confirmed by biopsy.

Fig. 16—Diffuse odontoma.

Fig. 17—Traumatic bone cyst.


11


12


13


15


16


14


17

This type of cyst must be differentiated from the pyogenic membrane that surrounds a well walled off abscess.

When the follicle of an unerupted, impacted, or partly erupted tooth proliferates, forming a cyst membrane, a follicular or dentigerous cyst is present. This type of membrane is thick and does not disintegrate during enucleation. If infection of such a cyst has taken place, degeneration of the cyst wall at the point of rupture is virtually the only degenerated area. The common location for such cysts are the third molar, the bicuspid, and the cuspid areas of both the maxilla and mandible.

Dentigerous cysts may result if a part or the whole of the follicle of an extracted malposed tooth is left. We are accustomed to recognize this type of cyst by the presence of a tooth within the sac or sac wall (Fig. 5). We sometimes forget that the original follicle may have been left in place after an extraction (Figs. 3 and 4).

Irritation of a dentigerous cyst may lead to the formation of a multilocular cyst (Fig. 8). This type of cyst is easily diagnosed roentgenographically, because of the number of septums which can be made out in the substance of the radiolucent mass.

Adamantinoma

Dentigerous cysts may also form adamantinomas. Roentgenographic and clinical differentiation between the multilocular cyst and the adamantinoma is more difficult (Figs. 9, 10, and 11). The points of roentgenographic differentiation are as follows: the size of the cysts in the multilocular cyst is large; in the adamantinoma the cystic areas are small. The septums in the multilocular cysts are long, narrow, and sweeping; in the adamantinoma they are short and wide. Clinically, aspiration of the multilocular cyst reveals fluid; in the adamantinoma there is no fluid unless it has undergone cystic degeneration.

Giant Cell Tumor

The giant cell tumor of the jaw may resemble, roentgenographically, the multilocular cyst or the adamantinoma. Septums of bone within the giant cell tumor may be observed in the roentgenogram. This may result in an erroneous diagnosis (Fig. 12).

Median Cyst

The median cyst is an interesting phenomenon. It is often mistaken for an enlarged incisal foramen. An embryologic defect permits an inundation of the nasal mucous membrane through the midline of the premaxilla. Later in life the opening closes, leaving the membrane as a sort of hernia. The epithelium takes on a glandular function, secreting a fluid and creating a cyst. Diagnosis is made by aspiration of the contents which usually appears as a clear, straw colored fluid, unless infection has taken place (Fig. 13).

Fig. 18—Carcinoma of mandible.

Traumatic Bone Cyst

Theodore Blum, in 1932, reported three cases of traumatic bone cysts occurring in young people. As a result of intramedullary hemorrhage caused by trauma, there is a dissolution of the bone with cavity formation. Diagnosis of such a cyst may be made in the presence of a full quota of vital teeth (Fig. 17).

Jawbone Conditions Associated With Parathyroid Disturbances

The relation of the parathyroids to calcium-phosphorus metabolism has been an interesting study from the standpoint of the dentist. Parathyroid tumors give rise to a high calcium and a low serum phosphorus, with a large urinary output of both minerals, which generally depletes the bones. As a result of this, the bones become porous and may be seen in dental roentgenograms as an osteoporosis. The bone structures in the areas involved may be converted into a form of fibrous tissue called osteitis fibrosa (Figs. 14 and 15). At times there is a complete demineralization of some of these areas, giving rise to a generalized formation of cysts, which Von Recklinghausen described in 1891, and to which the name of osteitis fibrosa cystica has been given. At other times tumors composed of osteoclasts are formed. These are called osteoclastomas.

When there are two or more cysts in one jaw, it is wise to take a roentgenogram of the other jaw and one or more of the long bones. In the presence of multiple cysts, blood examination for the calcium-phosphorous determination must be made.

Osteitis fibrosa and the osteoclastomas are difficult to differentiate from osteoma, sarcoma, and other bone tumors. Diagnosis is made by biopsy.

Odontoma

The proliferation of aberrant tooth buds during embryonic life creates a number of denticles which generally group themselves around an impacted tooth, the follicle of which may surround the mass. These denticles may occur at times without the presence of an impacted tooth, revealing roentgenographically a radiopaque mass. This is the odontoma. At times this mass may be so compact as to make diagnosis difficult (Fig. 12).

Carcinoma

Primary carcinoma of the jaw is recognized by fingerlike destruction of the periosteum and bone. Its origin is generally in the soft tissues (Fig. 18).

Metastatic carcinoma may arise within the body of the bone and extend to the soft tissues.

Conclusion

The successful outcome of any

(*Continued on page* 329)

ORTHODONTIA FOR THE GENERAL PRACTITIONER

J. E. RICHMOND, D.D.S.
Eugene, Oregon

Cooperation Between Orthodontist And General Practitioner

IT SEEMS to me a feasible proposition for any dentist located where an orthodontic specialist is not available to find an orthodontist who will be willing, for a reasonable fee, to assist him in diagnosing orthodontic cases, make appliances designed to do the work required by the case, and consult with him by mail as the case progresses. Orthodontists, like general practitioners are not too busy these days and it seems to me that such a project might be profitable from three points of view: the orthodontist might occupy his spare time profitably in making the appliances; the general practitioner might receive a fee that would be otherwise impossible, and the patient might receive needed treatment which his location does not permit him to receive from an orthodontist. Naturally, many cases will not be of a type that lends itself to this arrangement, but there are some that might be handled in this way with success and mutual satisfaction. The orthodontist consulted can advise the general practitioner as to the practicability of attempting such treatment in a particular case.

Efficiency of an Orthodontic Appliance

Efficiency of an orthodontic appliance is not produced by a design that provides the greatest pressure but by one that has the greatest potential movement with the least initial pressure.

It is axiomatic that the greatest possible movement that can be produced by one adjustment of an orthodontic appliance is the distance that the power unit is displaced from its rest position to its working position. Most laboratory appliances, of the labial arch type, seem to be a simple expansion arch to which the teeth to be moved are attached by ligatures or attachments. If this arch wire is an Angle Expansion Arch "E" it will require 4 pounds of pressure to deflect it one fiftieth of an inch; hence it will produce a pressure on the tooth, to which it is attached, of 4 pounds, and have a potential movement of only one fiftieth of an inch. If the arch wire is a 19-gauge platinized gold wire, it will have an initial pressure of more than 2 pounds to produce the same movement.

A 24-gauge finger spring might be soldered to the arch which would have a potential movement of one eighth of an inch or more and have an initial pressure of only from 4 to 6 ounces, depending on the length of the spring. Coil springs may often be used, according to the technique of Doctor E. B. Arnold, and extensive movement obtained with a pressure always well below a pound. I have never seen any laboratory appliances that took advantage of the light, resilient pressure.

Importance of Models

The dentist should bear in mind that one orthodontic model by itself means absolutely nothing. Often, and perhaps usually, the relation of the teeth in the opposing jaw holds the key to the irregularity. In looking at an upper model, for instance, in which the incisors are prominent and widely spaced, it would appear a simple matter to draw the incisors lingually, thus closing the spaces and reducing the prominence. By observing the occlusion, however, one will usually find that there is a disto-occlusion of the lower teeth and the lower lip rests to the lingual of the upper incisors and forces them labially; or there is an excessive vertical overbite and the lower incisors are impinging on the soft tissues behind the upper incisors with the same result. Often there is a combination of the two, but, in any case, an attempt to correct the uppers alone will meet with failure.

Models of both the upper and the lower teeth should be made. With the patient in the chair, the models should be placed in the proper relation to each other and the relation checked with the patient's teeth in occlusion. Then, with the models held in the proper relation to each other, a pencil mark is drawn from the upper to the lower teeth in the molar and cuspid region of each side. This will enable the orthodontist to articulate the models accurately.

"Line of Harmony"

Doctor Angle held that the upper molars were always in their proper mesiodistal relation. This has been proved not to be true and a complicated system of "gnathostatic" models and photographs has been devised to ascertain whether or not the upper jaw is in the proper relation to the head. Angle's "line of harmony" will give almost the same results. The "line of harmony" is a line drawn from the most prominent part of the forehead, through the middle of the wing of the nose, and extended downward. This line should cut the upper lip, just touch the lower lip, and should almost touch the chin. Usually, when the lower molars are in disto-occlusion with the uppers, the chin will be found to be considerably short of the "line of harmony." Occasionally the lower molars will be found in disto-occlusion to the uppers; nevertheless, the chin will be well out to the "line of harmony." In that case the lower jaw would be in normal relation to the head, and the upper in mesio-occlusion to the lower. In other words, the models would show a disto-occlusion of the lower but an examination would show a mesio-occlusion of the upper and the treatment would be different.

In applying the "line of harmony" to the face of a patient in the chair, the operator can place the patient in such a position that he sees the profile clearly. With one end of a length of dental floss in each hand, held taut so that it forms a straight line, the forehead, over the nose is touched with the floss and the floss is extended downward so as to pass through the middle of the wing of the nose. The relation of the floss to the lips and chin will show how the profile deviates from the "line of harmony."

A Simple Orthodontic Case

There is one type of irregularity that is encountered in almost every practice which seems to me especially indicated for treatment by the dentist who wishes to do a simple case of orthodontia; that is, a case in which an upper incisor is biting lingual to the lowers but the arch is large enough to permit its being brought

to place without expanding the arch. Such cases are rather common and their treatment at the earliest possible moment is indicated, both because they are easy to correct and because they are apt to do considerable harm to the lower incisors because of traumatic occlusion.

Such a case is shown in Fig 1. The patient was 8 years old. The incisal edge of the upper central was 3 mm. below the incisal edge of the lower incisor which was closing labial to it; the upper central would have to be moved labially at least 3 mm. before it could begin to bite to the labial of the lower and thus assist in correcting its own position and that of the lower.

This might have been corrected by a simple labial arch fitted to molar bands and ligated to a band on the lingually posed incisor. In that case, if the arch wire were of the 16-gauge German-silver type, it would have been necessary to produce a force of 4 pounds on the central if one expected to get a movement of one fiftieth of an inch. If a 19-gauge wire were used one must exert a 2 pound pressure to get the same movement. On the chart shown in Fig. 2 the solid line shows how this 4 pound force would be applied and dissipated (provided that the tooth would move the fiftieth of an inch in two or three days). The dot-dash line shows the effect of the 2 pound pressure with the same assumption. The chart shows four adjustments one week apart. The greatest possible movement that could be expected by these four adjustments would be four fiftieths of an inch or 2 mm. It is apparent that this movement would still lack 1 mm. of bringing the incisal edge of the upper central beyond that of the lower, and meantime, the effect of the traumatic occlusion would be increasing with each adjustment. Furthermore, there is the consideration that a 4 pound or even a 2 pound pressure is altogether too great to stimulate normal bone-cell action. It has been proved long ago that heavy pressures defeat their purpose by destroying physiologic reaction. While authors who use heavy pressures do not tell how many ounces or pounds constitute heavy pressures, one might easily understand the effect of a 4 pound pressure if he were to place a finger on a table top and set a 4 pound flat iron on it for half an hour; then consider that when this force is put on a tooth, there is a delicate periodontal membrane between the tooth and the wall of the alveolus pinched by that force.

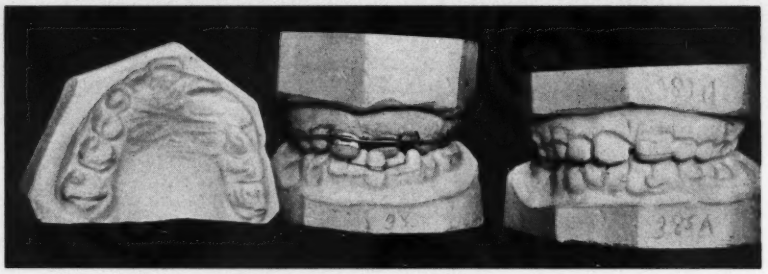


Fig. 1—Case in which bite of an upper incisor is lingual to the lowers but arch was large enough to permit the teeth to be brought to place without expanding the arch.

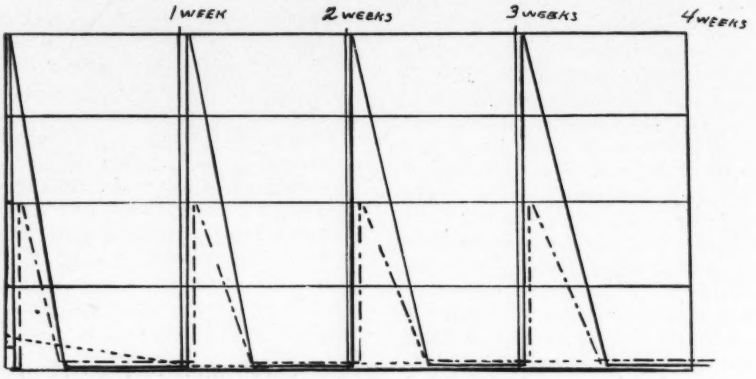


Fig. 2—Chart showing how 4 pound force would be applied and dissipated (represented by solid line). Dot-dash line shows the effect of a 2 pound pressure. Four adjustments are shown one week apart.

One's first reaction on looking at this case would be that it would take considerable force to make a tooth move labially 3 mm. and at the same time jump a hurdle 3 mm. high.

Technique

1. In this particular case a 24-gauge finger spring was used to produce the power to move the tooth (Fig. 3); it was soldered to a 19-gauge arch wire which was held by horizontal tubes on the molar bands and an open tube on the right central band. The finger spring was 15 mm. long with an eyelet on the free end which was ligated to a hook on the mesiolingual angle of a band on the left central. The free end of this spring lay against the arch wire before it was attached to the tooth; therefore, when it was sprung into its working position on the tooth, it had a potential movement of 5 mm. although it exerted a force of only 6 ounces at the most.

2. A wire ligature was passed around a tooth on each side of the malposed lower incisor and both strands passed to the labial of this tooth. This was to support this tooth against the traumatic occlusion which had already caused a considerable recession of the gums at its gingival border.

3. The appliance was put on in this case on a Monday and the child's parents said that the upper tooth jumped over the bite on the following Saturday, only five days later, and that there had been little soreness. The dotted line on the chart shows the progress of the pressure from this one adjustment. The patient was not seen for a month after the appliance was placed. At that time both the upper teeth and the lowers were in excellent alinement.

Comments

Among orthodontists there is an ever growing tendency to use resil-

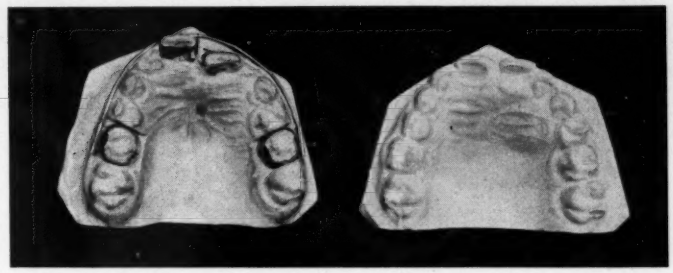


Fig. 3—Finger spring (24-gauge) used to produce the power to move the tooth.

ient appliances. This does not seem to be recognized by the average laboratory that makes appliances for the general practitioner. Perhaps orthodontists in general will not care to cooperate in the manner that I have suggested, but the general practitioner should bear in mind that in orthodontia he should measure pressure in ounces and not in pounds; that the most efficient appliance is the one with the most potential movement and the least initial pressure, and that large forces tend to defeat their purpose by destroying normal physiologic reactions.

Beside this matter of orthodontic treatment there is an opportunity to practice preventive orthodontia which concerns the general practitioner more than the orthodontist; that is, (1) the preservation of the deciduous teeth, especially the deciduous molars until the permanent teeth are ready to erupt; (2) the space that they are holding for the bicuspids is often quickly lost if considerable time elapses between their extraction and the eruption of the bicuspids, and (3) many orthodontic cases which would have otherwise been normal are created by too early extraction. (4) Moreover, the deciduous molars should never be extracted, without definite evidence that the bicuspids are present in the jaws, merely because a child has reached the age when one would expect the bicuspids to erupt. There is a surprisingly large number of persons in whom some of the permanent teeth fail to form. These are more commonly the second bicuspids and upper laterals. Deciduous molars often give good service until a patient is 40 or 50 years of age in those cases in which there are no permanent teeth. If deciduous teeth are extracted, when no successors exist, the result is as serious as the loss of a permanent tooth.

1175 Charnelton Street.

ROENTGENOGRAPHIC AND DIFFERENTIAL DIAGNOSIS IN ORAL SURGERY

(*Continued from page* 326)

particular case is the result of a correct diagnosis. By a process of elimination, that is, differential diagnosis, a true diagnosis may be made. At times, biopsy for histologic differentiation is essential. Correct roentgenologic interpretation is a necessary aid, but cannot displace clinical evidence. To this may be added experience and keen powers of observation, the sum total of which determines the degree of success.

311 Commonwealth Avenue.

THE MANAGEMENT OF THE MANDIBULAR THIRD MOLAR

(*Continued from page* 321)

If one studies the mandible in the dry specimen, one will see that the buccal aspect of the third molar does not present anatomic structures such as is evident on the lingual side. Here there is easy downward passage of an infectious process in the soft structures that make up the floor of the mouth and the deeper structures that bind the base of the tongue and the tonsillar area. Infections here are dangerous, and the fact must be ever present in the operator's mind when he reaches back of the third molar to the lingual side for surgery. This is the vulnerable point. Trauma here should be prevented by every means at one's command.

The logical procedure for the general practitioner to follow in the handling of these acutely infected third molars is to irrigate the suppurative area with hot saline solution, and when the inflammation has subsided somewhat, to direct the operative manipulations in the mesiobucco-gingival aspect of the third molar for fulcrum and leverage. This is a safe procedure, and should in most cases yield uncomplicated results.

THE SIMPLICITY OF THE WORKING BITE

ALBERT J. NATHANSON, D.D.S.
Baltimore

1. The bite blocks are built in the usual manner, with compound substituted for wax.

2. The biting surfaces of the rims are shaped with a template, which can be bought in any supply house. However, the manufactured template is built on a 4 inch sphere which is too deep for our purpose and it must be reduced in depth by 50 per cent, or made from a segment of a vessel that is 16 inches in diameter. This makes a perfect template for shaping the biting surfaces of the bite blocks.

3. I am stressing the importance of reproducing the curvature on the biting surfaces of the bite blocks because the mandible swings in an arc during the process of mastication. Inasmuch as the teeth are to be set to the lower bite block, it is necessary to have the contour of the bite blocks as close to the normal curvature as possible.

4. When the area of the temporal fossa in a dry skull is measured, it will represent Munson's 4 inch sphere (4 inch radius or 8 inches in diameter). Experience has taught me that if I double the sphere to 16 inches in diameter, there is less to balance by removing the high points of the cusps that interfere with the free movement of the mandible during the process of mastication. I might mention here that the cusps of the manufactured teeth are built arbitrarily to a standard cusp relationship to follow a standard arc during mastication. Since the depth of the glenoid fossa is governed by the wear of the teeth and since the arc of the cusp of the teeth bears a direct relationship to the glenoid fossa, it naturally follows that the teeth will have to be trimmed or balanced. I have, therefore, accepted a segment of a 16 inch vessel as a template to form the biting surfaces of the bite blocks. A piece from the side of a can of lard, for example, may be used for the template.

5. When the bite blocks are inserted and the patient closes his mouth with the facial muscle relaxed, the rims are to touch simultaneously with the closing of the lips. Then apply cocoa butter to the biting surface of the upper bite block, chill, and introduce into the patient's mouth.

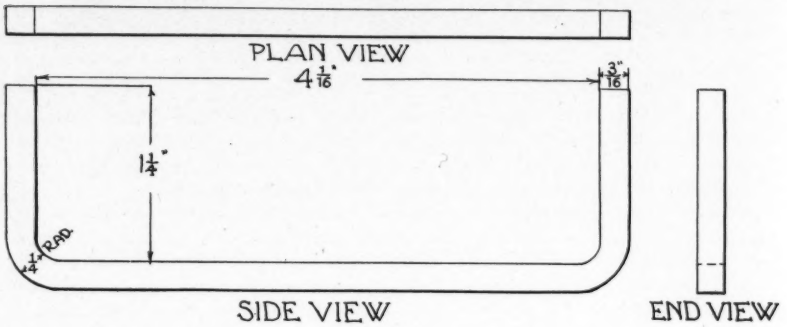


Fig. 1

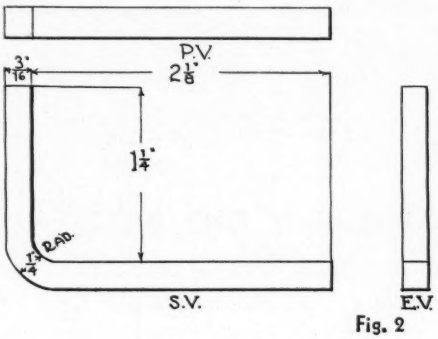


Fig. 2

Fig. 1—Side view of a $\frac{3}{16}$ inch square piece of brass, 7 inches long with each end bent down $1\frac{1}{4}$ inches, giving a span from tip to tip of $4\frac{1}{2}$ inches.

Fig. 2—Segment that is soldered directly in front of the lower portion of the articulator. It is a square piece of brass of the same thickness shown in Fig. 1, approximately $3\frac{3}{8}$ inches in length and the bent portion $1\frac{1}{4}$ inches. The upright portions of the lower arms are of equal height.

6. Soften 2 mm. of the biting surface of the lower bite block; introduce into the patient's mouth, with the instructions to move the mandible from side to side with slight pressure. This will give two important points on which to build the denture: (1) the inherent curve of that particular patient's mandibular movement; (2) the 2 mm. clearance that is so important when the jaws are at rest before the teeth come in contact.

7. When the bite blocks are of the proper length, width, and height, with accurate adaption and perfect comfort, the patient will invariably close his mouth normally. A further check can be made by making a cross mark with a sharp instrument on the buccal surfaces of the bite blocks when the jaws are closed. Instruct the patient to open and close the jaws repeatedly. If the centric relationship is correct, the marks will remain constant. The question is whether the first relationship is correct when the patient is instructed to close his mouth. That can be determined by making a duplicate mark and checking one against the other. Cut notches on the buccal surfaces of the bite blocks in the area of the first bicuspids. Introduce in position; request the patient to close the mouth. This will give the centric occlusion. It is not advisable to mention "bite" before the patient, as it will suggest just that and will give a protrusive position. The bite blocks are fixed by pressing softened pink wax into the notches; the blocks are then mounted on the articulator.

8. At this time, with the patient's inherent curve on the biting surface of the lower bite block to set the teeth to, I usually set the teeth up for a try-in. This curve, however, is not sufficient to give balanced relationship because of cuspal interdigitation.

It may be emphasized that there is a difference in the path of the mandible from centric occlusion and the working bite in about 60 per cent of the cases. This is particularly noticeable in patients who are in the habit of chewing with the anterior teeth.

9. It should be borne in mind that

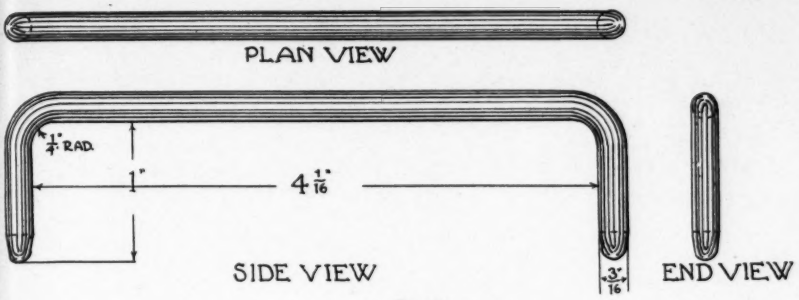


Fig. 3

Fig. 3—A round piece of brass 7 inches in length, 1¼ inches bent down at each end. The distance from tip to tip is 4½ inches. This is to be soldered on the upper segment of the articulator, directly over the lower lever arms of the same length.

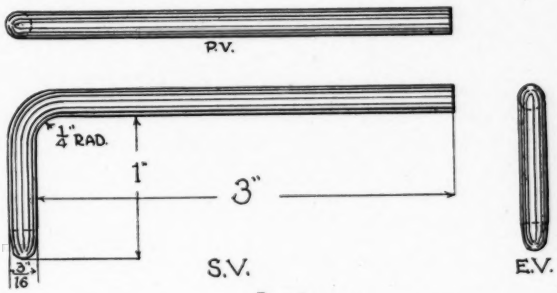


Fig. 4

Fig. 4—A round piece of brass 4¼ inches in length, 1¼ inches bent down and soldered on upper segment of articulator directly above the front lower lever arm.

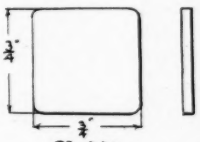


Fig. 5

Fig. 5—A piece of brass ¾ inch square, 1/16 inch thick, one of which is to be soldered on each upright lever arm.

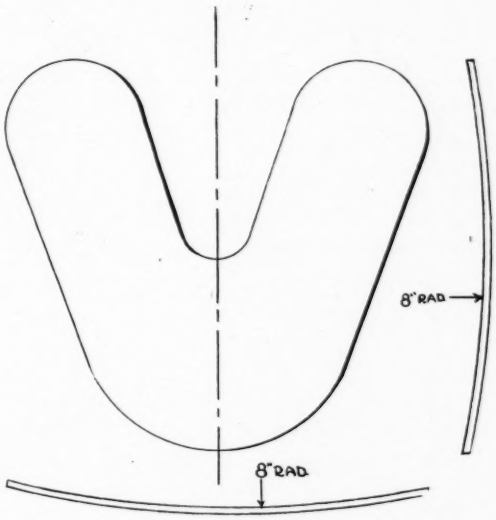


Fig. 6

Fig. 6—A template that can be bought in any dental supply house and reduced in depth to an 8 inch radius. If the template cannot be bought a section of suitable size of a vessel 16 inches in diameter will give the proper curvature.

the patient is to have anteroposterior freedom of movement as well as lateral; therefore, from 1 to 1.5 mm. of space should be allowed anteroposteriorly when setting the lower anterior teeth against the upper. This allows freedom of movement of the mandible anteroposteriorly and possibly prevents cutting of the anterior teeth for balance after the proper length has been established. Invariably the incisal points of the cuspids will be found to be too long. A safe procedure is to cut part of the points off before the set-up. The final balance is described later.

10. If flat-cusp teeth are used, this entire procedure can be carried out on a straight-line articulator to final delivery with a reasonable degree of accuracy; however, the disadvantages in the use of flat-cusp teeth are that the lower denture has a tendency to drift forward because of lack of cuspal interdigitation and in due time the space that has been provided for anteroposterior movement will be lost. The reason we have provided that anteroposterior space when setting the lower anterior teeth against the upper, beside the esthetic reason, is to prevent traumatic occlusion to the upper anterior teeth during the process of mastication. Any pressure on the upper anterior teeth without stabilization on molars at the same time has a tendency to break the postperipheral seal and unseat the upper denture.

Of course, it is an easy matter to remove the trauma by cutting the teeth. However, it is not so easy in cases in which it is necessary to compromise with the length of the anterior teeth for esthetic reasons.

11. I have mentioned previously that the mandible swings in an arc during the process of mastication. In order to get any degree of accuracy from any instrument, it must copy that arc. The treatment of the bite blocks herewith described will copy that arc and by virtue of adding the lever arms to a straight-line articulator, it will reproduce the arc with a reasonable degree of accuracy. The tracing is done by round-headed tacks, the size of a number 5 bur, sunk in the lower bite block, and as the patient is instructed to carry out the masticatory movements, rim against rim of the bite blocks the heads of the tacks in the lower bite block will carve out the grooves in the upper bite block by friction. To prepare bite blocks for tracing the working bite, the bite blocks are returned to the articulator and three holes are drilled with a number 4 bur on the biting surface of the lower rim, one in the center and one on each side to receive the brass strip finishing round-headed tacks. The tacks are heated and inserted in the drilled holes with heads exposed above the biting surface of the lower rim. The heat fixes the tacks in the compound. The articulator is closed after insertion of each tack while the compound is still soft from hot tacks, in order to make sure that all three heads of the tacks touch the upper rim at the same time.

12. Both bite blocks are introduced in position and the patient is requested to scratch from side to side. Patients seem to understand better when the word "scratch" is used. It

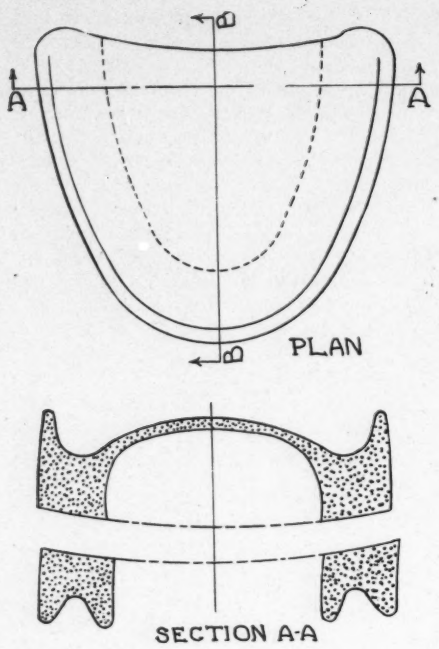


Fig. 7—The modeling compound bite blocks employed when the template is used to shape the biting surface.

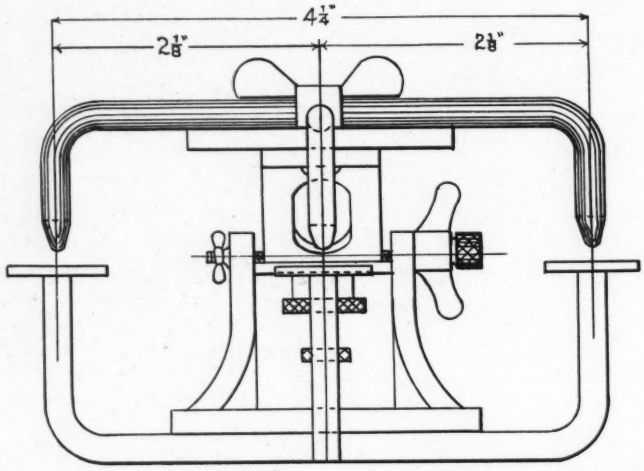


Fig. 8A

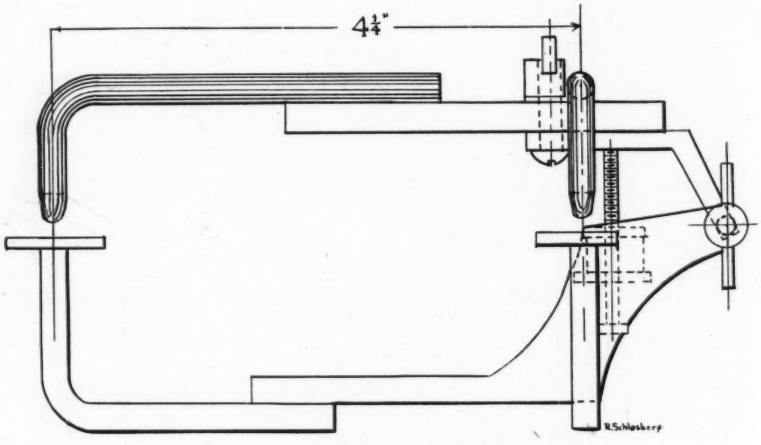


Fig. 8B

Fig. 8—A view of the completed instrument, giving the plan view, or, looking at it from the top surface, the front elevation and the side elevation. Add about ¼ inch thickness of compound, enough to cover, on the segments of the articulator represented in Fig. 5.

should not take more than a few minutes for the patient to give a tracing of the modified gothic arch which is characteristic of the movements of that particular patient's mandible.

13. While the patient is recording the tracing, the operator continues to observe the movements. When the rims are barely touching, it is time to tell the patient to rest; meanwhile blocks are removed preparatory to reproduction of mandibular movements on the articulator to be described.

Construction of Articulator

The only new feature of the articulator is the lever arms which are soldered to a straight-line articulator. The straight-line articulator is of use only to register centric occlusion. However, it has all the features of an anatomic articulator after the lever arms are soldered to it, and is constructed as described in the specifications. The purpose of the lever arms is to obtain a permanent registration of the mandibular movements on an instrument. The lower upright lever arms with its modeling compound covered flat discs act as a diaphragm; and the upper lever arms are bent downward to the center of the flat discs and act as a stylus.

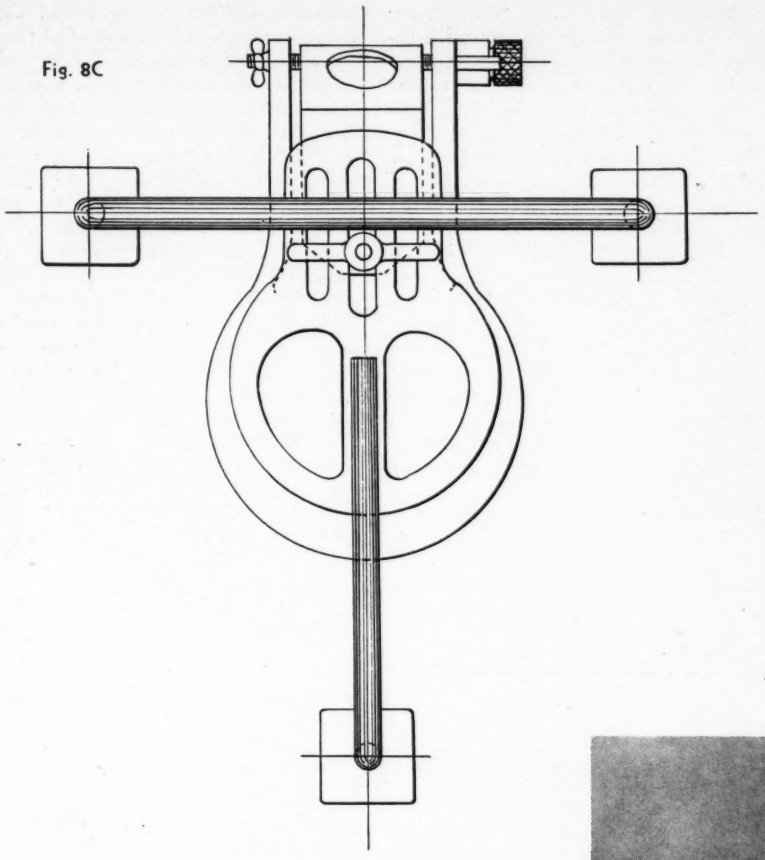
Reproduction of Mandibular Movements

To reproduce the mandibular movements on the articulator which were established on the bite blocks, the following procedure is suggested:

1. Remove the *upper* set screw; this gives two separate parts, with the upper model on the upper segment and lower model on the lower segment.

2. Steep the three squares represented in Fig. 5 in hot water to soften the compound on them. Replace the bite blocks on models, and

Fig. 8C



PLAN

which were previously obtained on upper bite block, represented as J from H.

E are flat discs of brass, soldered on upright segments of A and B superimposed with softened modeling compound represented as G.

F are the bite blocks, substituting hard compound for the rims instead of wax.

G is the softened modeling compound superimposed on E containing the grooves, which are reproduced from J, marked by C and D.

H are the round-headed tacks heated and sunk up to the head in the lower rim of bite blocks; the patient will in turn reproduce the tracing represented as J.

J are the tracings obtained by friction from H during the patient's mandibular movements.

K is the upper set screw that is to be removed which divides the articulator into two parts. Divert the remaining upper posterior flange so that C and D can move laterally, and mark the gooves in softened compound G, from H and J. This is done by holding the upper segment of the articulator, including the upper model and upper bite block F with tracings J in one hand, and lower segment of articulator including lower model, lower bite block F, with round head tacks H, in the other hand. As H rides in the tracings, J, C, and D automatically reproduce the grooves in softened compound.

Fig. 9—A and B are the lever arms, soldered on the lower surface of a straight-line articulator, the upright segments superimposed by E.

C and D are the lever arms, soldered on the upper surface of the same articulator. The bent down portions are the markers that reproduce the grooves in softened compound E,

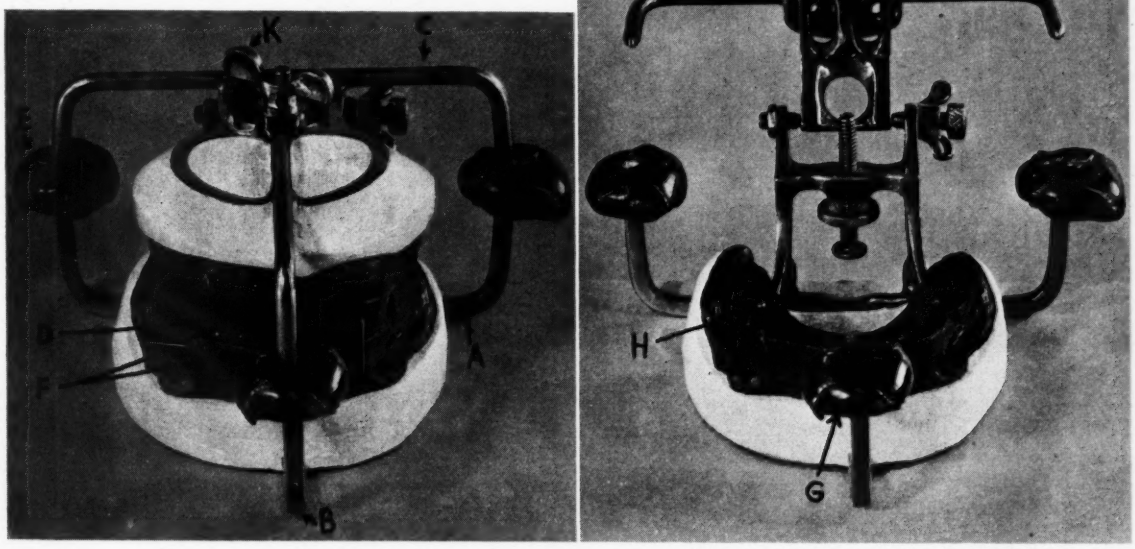


Fig. 9

as the tacks ride in the grooves that the patient has established, the lever arms of the upper segment of the articulator will automatically reproduce these grooves on squares of softened compound.

3. Chill the compound squares. If there is any shrinkage add a piece of compound, the thickness of 2 mm. in each groove, and soften with an alcohol flame. The mandibular movements are repeated on the articulator as previously.

4. Remove the bite blocks and replace the set-up teeth with carbon paper between them. As the lever arms move in the grooves that have been reproduced on the squares from the bite blocks, the carbon will mark the high points of the teeth.

5. Remove the high points until all the teeth ride over one another without any interference. To check any elements of error further, after vulcanization, the finished dentures are introduced into the mouth, with articulating paper between them.

6. The patient is asked to register the mandibular movements. If high points are in evidence, remove them. No matter how careful one is to remove the macroscopic elements of traumatic occlusion, some of the microscopic points remain.

It is generally agreed that carborundum paste, applied on the biting surfaces of the teeth and introduced in the patient's mouth with the instructions to mill them in until the teeth glide smoothly over one another without tripping, will remove the high points remaining.

7. The final operation is polishing of the surfaces of the teeth that have been cut.

POSTOPERATIVE INSTRUCTIONS

1. Inform the patient why the teeth feel strange; namely because the orbicularis oris has collapsed and the tongue has enlarged or spread to take up the tooth space. Obviously, the tongue cannot shrink and the tone of the muscles of the cheeks and lips cannot be restored in a day or two.

2. With every effort to polish the biting surfaces of the teeth, the glaze may not be reproduced; the dentures have a tendency to drag, which, in turn, will frequently cause a traumatic ulcer. One should restore the glaze instead of cutting the vulcanite. This can be done by instructing the patient to apply some butter on the articulating surfaces of the teeth; to mill them for ten minutes each day for a week, and return for observation. If inadequate, instruct the patient to continue polishing until all the glaze is restored. Inform the patient that the sooner the glaze is restored, the quicker he will be able to eat with the dentures.

2106 East Baltimore Street.

ABOUT OUR CONTRIBUTORS

DWIGHT TAYLOR BARCROFT, D.D.S. (Northwestern University Dental School, 1922) is a member of the A. D. A., Illinois State Dental Society, and the Chicago Dental Society, and has a general practice.

The biographies of M. Hillel Feldman, D.D.S., and Julius Hendler, D.D.S., have appeared in previous issues of THE DENTAL DIGEST.

MAX H. JACOBS, D.M.D., M.D. (Tufts College Dental School, 1918 and Middlesex College of Medicine and Surgery, 1925) was a contributor to the first issue of the reorganized DENTAL DIGEST in January, 1932, with his article, NITROUS OXIDE-OXYGEN ANESTHESIA—A PROPOSED NEW TERMINOLOGY. Doctor Jacob's professional biography appeared in that issue of the magazine.

JOHN EDGAR RICHMOND received his degree in 1907 from Northwestern University Dental School. Doctor Richmond has written for the J. A. D. A. and the International Journal of Orthodontia. He is an orthodontist, a member of the American Society of Orthodontists, a member of the American Dental Association and his state and local component societies.

ALBERT J. NATHANSON, D.D.S., Senior Captain D. O. R. C. (University of Maryland, 1916; postgraduate course, 1918, Columbia University) is a member of the A. D. A., Maryland State and Baltimore City Dental Societies, Harris Haden, A. O. Dental Alumni Club of Baltimore, Gorgas Odontological Society. Doctor Nathanson was formerly assistant clinical professor at the University of Maryland, and is engaged in the general practice of dentistry. Doctor Nathanson acknowledges indebtedness for his technique to the late Doctor David Highkin and Doctor Thomas Litz.

DOUGLAS H. IRWIN, D.D.S., was graduated from the Kansas City Western Dental College in 1923. Doctor Irwin is a member of the American Dental Association and component societies, and in his practice, specializes in oral surgery.

EPULIS OR GIANT CELL FIBROMA: REPORT OF A CASE

DOUGLAS H. IRWIN, D.D.S.
Kansas City, Missouri

The patient, a youth, aged 14, presented because of an oral tumor.

Examination—The patient was considerably underweight owing to his inability to masticate anything but the softest of foods. The tumor was a pendulous mass which was suspended from a point between the upper left first and second bicuspids. It was remarkable only for its size and the far-reaching infiltration, both in the maxilla and the mandible. No deviation from the ordinary giant cell fibroma was discernible in the microscopic sections. The growth was large enough to conceal the maxillary bicuspids and molars and prevented the occlusion of any of the teeth.

History—Simple excision of the mass had twice been done, resulting in stimulation of the growth each time. No attempt had been made to destroy the base. Consequently the entire cancellous structure, both of the maxilla and mandible, had become completely infiltrated on the left side. The teeth were loose, and troublesome bleeding occurred frequently because of unavoidable traumatism while attempting to eat.

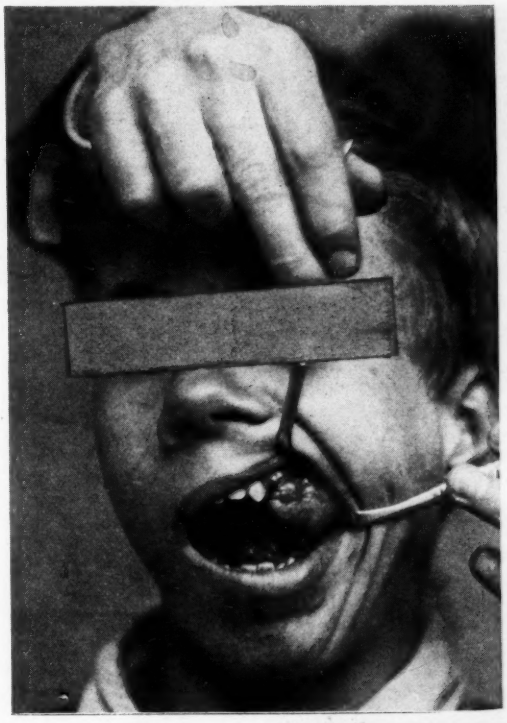
Pathologist's Report—"Concerning the sections made from the extensive fungating epulis of the upper jaw of the patient, the tumor is only remarkable for size and extent rather than because of any deviation from the usual giant cell tumor so common to this situation.

"At the base is a zone of cancellous bone, much of it showing bone in active formation.

"Overlying this is a broad zone of actively proliferating fibrous tissue richly nucleated. The fibers are large fibroblasts with large oval nuclei. Sprinkled through the whorls of such tissues are many large cell masses with nuclei, many in numbers, congregated in the center of the cell. These cells are loose in the stroma and seem to be an adventitious addition.

"These tumors are entirely benign but require painstaking and complete removal of the tumor bed or they will recur."

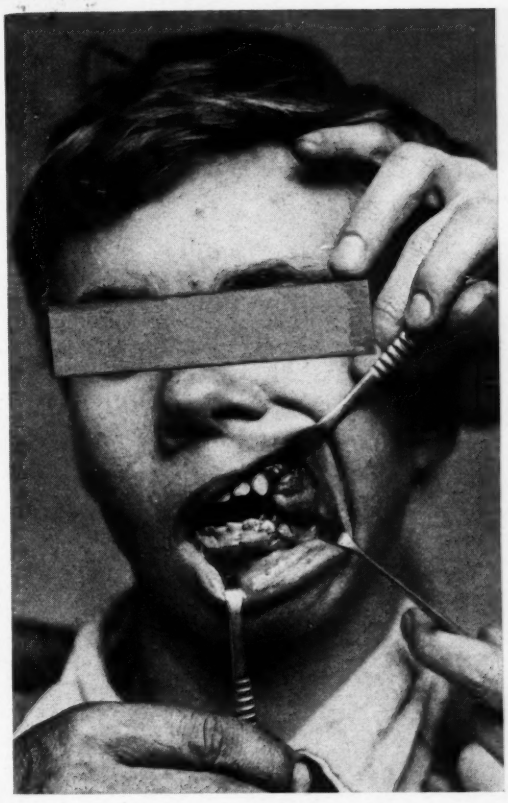
Treatment—A local anesthetic with a high epinephrine content was used in order to minimize the hemorrhage inasmuch as a complete cure demanded that the most minute portions of the tumor be completely removed.



The operative procedure consisted of a block incision extending from the gingiva between the upper central incisors upward to the mucobuccal fold, distally to the tuberosity. Lingually the incision was carried midway between the median line and the gingiva. Rongeurs were used for the removal of the maxilla up to the floor of the maxillary sinus. Penetration of the sinus had not occurred despite the deep infiltration.

The procedure adopted for the mandible was the removal of the teeth and all the cancellated bone from the left third molar to the right cuspid. The cortical bone remained unaffected.

Follow-Up—This operation was performed five years ago. Up to the present there has been no recurrence.



500 Argyle Building.

IMPACTED SUPERNUMERARY ANOMALIES: REGION OF THE ANTERIOR MAXILLA

JULIUS L. HENDLER, D.D.S.
New York

Fig. 1A

Fig. 1B

Fig. 1C

Fig. 1 (Case 1)—A, Impacted anomaly of small size at apex of central incisor; B, roentgenogram of anomalous area after removal; C, roentgenogram of anomaly after removal; postextraction roentgenogram of anomaly placed alongside of impacted cuspid, removed from same patient, to show relative size, shape, and anatomic structures.

THE anterior region of the maxilla is often the site of tooth structures that do not resemble any teeth anatomically, but have the basic histologic structures of teeth laid down in the proper sequence. These anomalies are supernumerary and are usually impacted. The region of the apex of the maxillary central incisor is a frequent sight of these anomalies.

Fig. 2

Fig. 2

Fig. 2 (Case 2)—Impacted anomaly resembling anomaly in Case 1; also in region of apex of central incisor.

Fig. 3

Fig. 3

Fig. 3 (Case 3)—Impacted anomaly of larger size; region of central and lateral incisors.

Fig. 4 (Case 4)—Impacted anomaly of larger size in region of apex of the central incisor.

Fig. 5

Fig. 5 (Case 5)—Anomalous tooth erupting at mucobuccal fold in midline of maxilla.

Fig. 6 (Case 5)—A and B, Roentgenograms at different inclinations to show size and position between the central incisors. C, Roentgenogram after extraction shows anomalous structure of tooth.

Fig. 6A

Fig. 6B

Fig. 6C

Fig. 7 (Case 6)—A and B, Supernumerary impacted anomaly of fair size situated between the central incisors. It is interesting to note that this tooth is inverted.

Fig. 7

2511 Chanin Building.

The Editor's Page

A BRILLIANT symposium on the present concept of focal infection was recently presented before a meeting of the Chicago Dental Society in commemoration of the approximate twenty-fifth anniversary of the momentous address by William Hunter delivered before the Faculty of Medicine of McGill University on October third, 1910. The speakers at this anniversary meeting were Lloyd Arnold, M.D., College of Medicine, University of Illinois; Boyd S. Gardner, D.D.S., of the Mayo Clinic; and William P. Murphy, M.D. of Harvard Medical School, and co-recipient of the Nobel Prize of 1934.

What Hunter meant by "oral sepsis" was quite different from what we at the present time understand by focal infection. Hunter conceived of oral sepsis as an unhygienic local condition of the mouth which was favorable to bacterial activity. Hunter believed that the swallowing of micro-organisms and their products was responsible for the general manifestations of disease.

Following the clinical application to dentistry of the discovery made by Roentgen, focal infection came to be understood, notably through the work of Billings and Rosenow, to mean a circumscribed area of inflammatory tissue, usually associated with the root end of pulpless teeth. All three essayists in this symposium emphasized that the cause of this infection and the possible systemic sequelae were intimately concerned with the entire body mechanism.

Doctors Arnold, Murphy, and Gardner had one compelling motif in their addresses; namely, that dental disease and its causation cannot be considered apart from the total body mechanism; nor can the consequences of any focal infection be considered in any but general terms. Doctor Murphy pointed out that dental foci were both actual direct contributors to general disease and were likewise complicating factors. Doctor Murphy also stressed the fact that there must be more than merely the means to demonstrate infection. After an infection has been demonstrated, its evaluation is almost as important. That is to say, the selection of the *type* of treatment and the *time* of treatment are as important as deciding that treatment is necessary. The dentist, in other words, must be interested in more than surgery *per se*. He must be interested in the techniques of surgery; but probably more important, is his need to be interested in the subject of surgical evaluation in which the total patient must be considered.

Doctor Murphy, whose important research has been done on pernicious anemia, cited, specifically, cases in which extraction of the teeth in persons suffering from pernicious anemia without the preoperative reinforcement of massive doses of liver extract resulted in severe complications. He also cited the case of the leukemic states and warned that abscesses appearing in the areas of the mouth associated with extreme general fatigue should at least suggest a blood dyscrasia. Fatigue, both physical and mental, may represent both a cause and a result of disease processes. Chilling of the body and dietary indiscretions were other factors mentioned which tended to lower the resistance to infection.

Doctor Gardner extended this point of view to dentistry and pointed out that in the surgical treatment of dental conditions, that is, the removal of teeth, shock, whether immediate or secondary, results from loss of blood in addition to loss of body heat. He emphasized that dental extractions should be done under conditions in which the heat loss is reduced to a minimum; in other words, in warm operating rooms where there is no possibility of chilling. Dental extractions, Doctor Gardner said, are best done on an operating table under accepted surgical conditions.

All three essayists emphasized, repeatedly and vigorously, that if dental foci were eliminated before degenerative changes took place in distant tissues a good purpose would be served. On the other hand, if tissue change has occurred as a result of focal infection, the removal of the infection may improve the general condition but will not result in the repair of the degenerated tissue, particularly if the tissue destroyed is highly specialized in its structure and function.

There are constant and hopeful signs throughout the country that dentists are accepting the principles of biology and the scientific method in attacking their problems. If this development progresses, Hunter's advice as to cooperation in preventive medicine will have been heeded: "In relation to the whole group of internal conditions caused by pyogenic organisms, I consider there is a wide field of preventive medicine open by the exercise of oral antisepsis (. . . no mere rinsing of the mouth . . .), a field that can be worked in, with the most surprisingly satisfactory results, alike by the physician, surgeon, dental surgeon, and patient."

To help build

FIRM TOOTH STRUCTURE

DENTAL DEFECTS, particularly in children and expectant mothers, are frequently due to a lack of calcium. The addition of this factor alone, however, is not sufficient. Three factors—calcium and phosphorus in correct ratio, and Vitamin D are essential for proper utilization.

In Dicalcium Phosphate Compound with Viosterol Squibb, the dentist has available an effective means of supplying the essentials for building firm tooth structure and one which patients will enjoy taking regularly.

Dicalcium Phosphate Compound with Viosterol Squibb is available in capsules and tablets. Each tablet contains the equivalent of 2.6 gr. calcium, 1.6 gr. Phosphorus, and 660 units of Vitamin D, U. S. P. X (1934 Rev.). They are supplied in boxes of 51. Two capsules are equivalent to one tablet and are available in bottles of 100.

E·R·SQUIBB & SONS, NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

Samples and literature will be sent to the profession on request
Address Dental Department, 745 Fifth Avenue, New York City

TABLETS CAPSULES Dicalcium Phosphate Compound *with* Viosterol Squibb